Gaspard N. Smith-Vaniz
U.S. and French Citizen

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My work in nuclear fusion, rocket propulsion, manufacturing, and software informs a systems-level approach to engineering challenges in space exploration, with strong communication and leadership in multidisciplinary teams.

Education

MSc. Space Systems Engineering & Robotics Minor, ETH Zurich   2024 — Expected 2026
- VLEO Satellite design semester project, focused on classical and air-breathing ion propulsion
- Cansat design, iteration, testing, and launch in end-of-semester project
- Data analysis project using various satellite datasets, including GRACE for Earth observation

BSc. Mechanical Engineering, Swiss Institute of Technology (EPFL), Lausanne   2021 — 2024
- Computer vision "pool game score & winner" program, using Matlab, C, LabView
- 5 month CAD project with CATIA V5 - industrial vegetable peeler design for volume production
- Engineering Department Mentor: helped students adapt to new environments & workloads
- Led the student's independent debate club as president. Managed and led finances, debate events.

Full-year Exchange, University of Illinois at Urbana Champaign, Urbana IL   August 2023 — May 2024
- Engineering and management advisor to the Liquid Propulsion Club at Urbana Champaign (LRI)

Relevant Experience

Engineering Intern, Commonwealth Fusion Systems   May — August 2024
- In charge of designing mechanical/robotic arm for Nuclear Fusion Tokamak assembly & integration
- Learned engineering communication skills, pushing design changes and solutions to a large team
- Trained for construction site safety, cleanroom training, lifting & rigging
- Familiarized myself with all project steps from kickoff, PDR, CDR, FDR
- Learned project and construction site management, working with analysts and contractors
- Built prototypes, iterated rapidly, pushed efficient troubleshooting initiatives
- Got comfortable with extreme complexity in nuclear system engineering and assembly

Student Engineer, EPFL Rocket Team   2021 — 2023
- Brought 4 projects from blank sheet to implementation, via design, prototyping, testing and validation
- Worked extensively with 3D CAD (CATIA and Solidworks), GD&T drawings, manufacturing methods
- Led a team of 12 engineers to build and launch a solid motor rocket carrying a small payload
- Member of effort to develop 1.7 kN liquid fueled, pressure-fed, cooled engine using LOx and ethanol
- Organized hardware purchasing, Rocket Team-Safety Office relations, inter-team communication
- Managed training, hardware design, production, testing, implementation on cryo-related systems
- Cut plumbing cost by 80% by modifying valves in house rather than purchasing COTS parts

Design, Manufacturing and Operations Intern, Validex   August — September 2022
- Designed with Solidworks, fabricated, machined, and installed motorized conveyor belt segments
- Translated technical documents for customer and partner cooperation across borders
- Assisted in supplier relations and establishing new customers
- Suggested and detailed minimal cost business and product expansion opportunities

Part Time Research Analyst, Launch Window Research   June — September 2022
- Researched and analyzed space industry players on financials, products, execution, and roadmap
- Delivered management reports detailing insights, findings and recommendations. Learned hands-on

Teaching Assistant, Mechanical Physics at EPFL   September 2022 — February 2023
- Communicated complex physics concepts to first and second year engineering students
- Led groups of 30 students through course content, problem sets in French, English

Key Skills

- French (fluent), English (fluent) and Spanish (limited working proficiency)
- Testing, prototyping, design, CAD, fabrication, composites, machining, 3D printing, soldering
- Proficient in most CAD, CFD and FEA software packages, STK, MathCAD, LabVIEW
- Excel, Word, PowerPoint, C, SQL, Python, CSS, HTML, Matlab
- Student private pilot with 23 hours of flight time